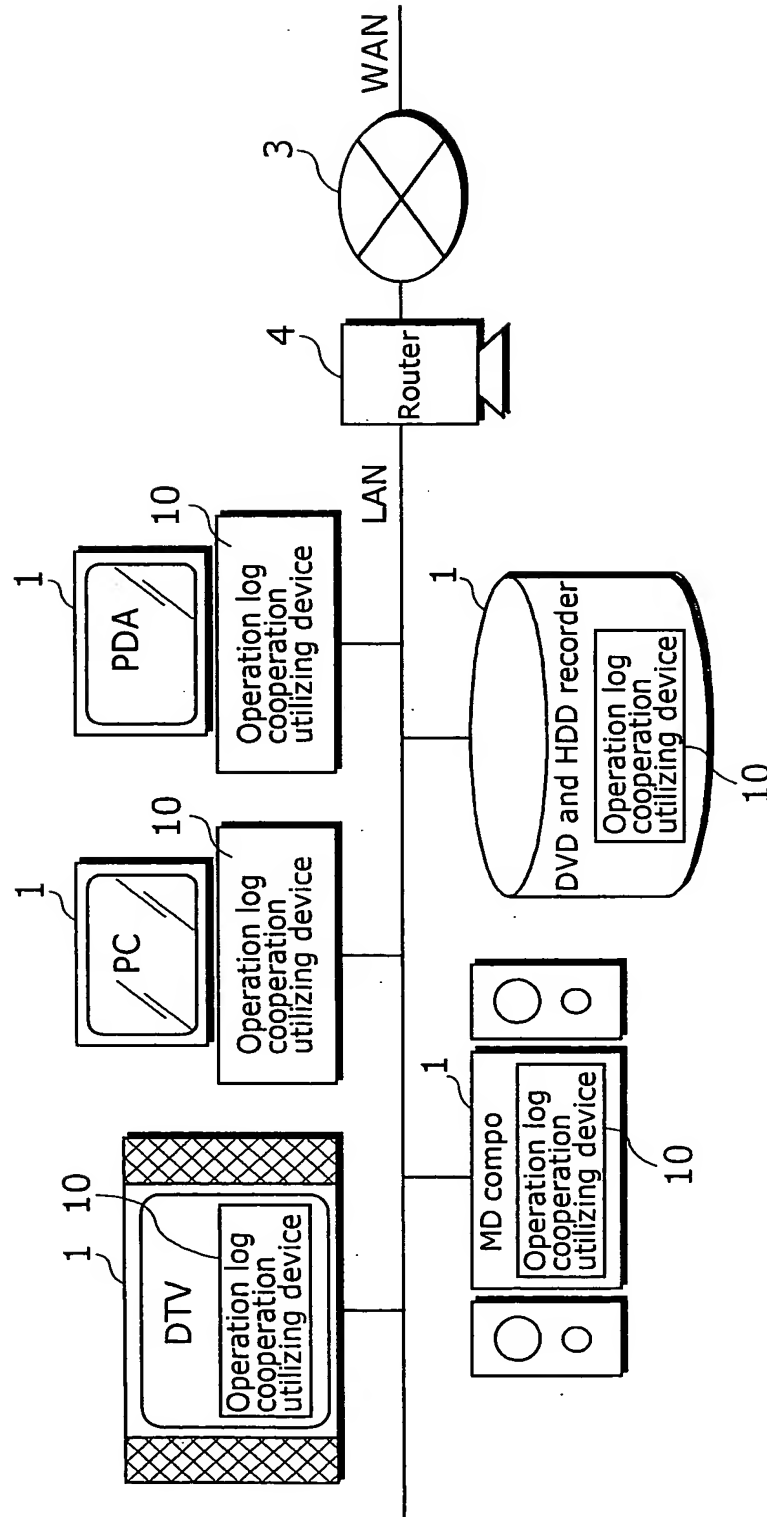


FIG. 1



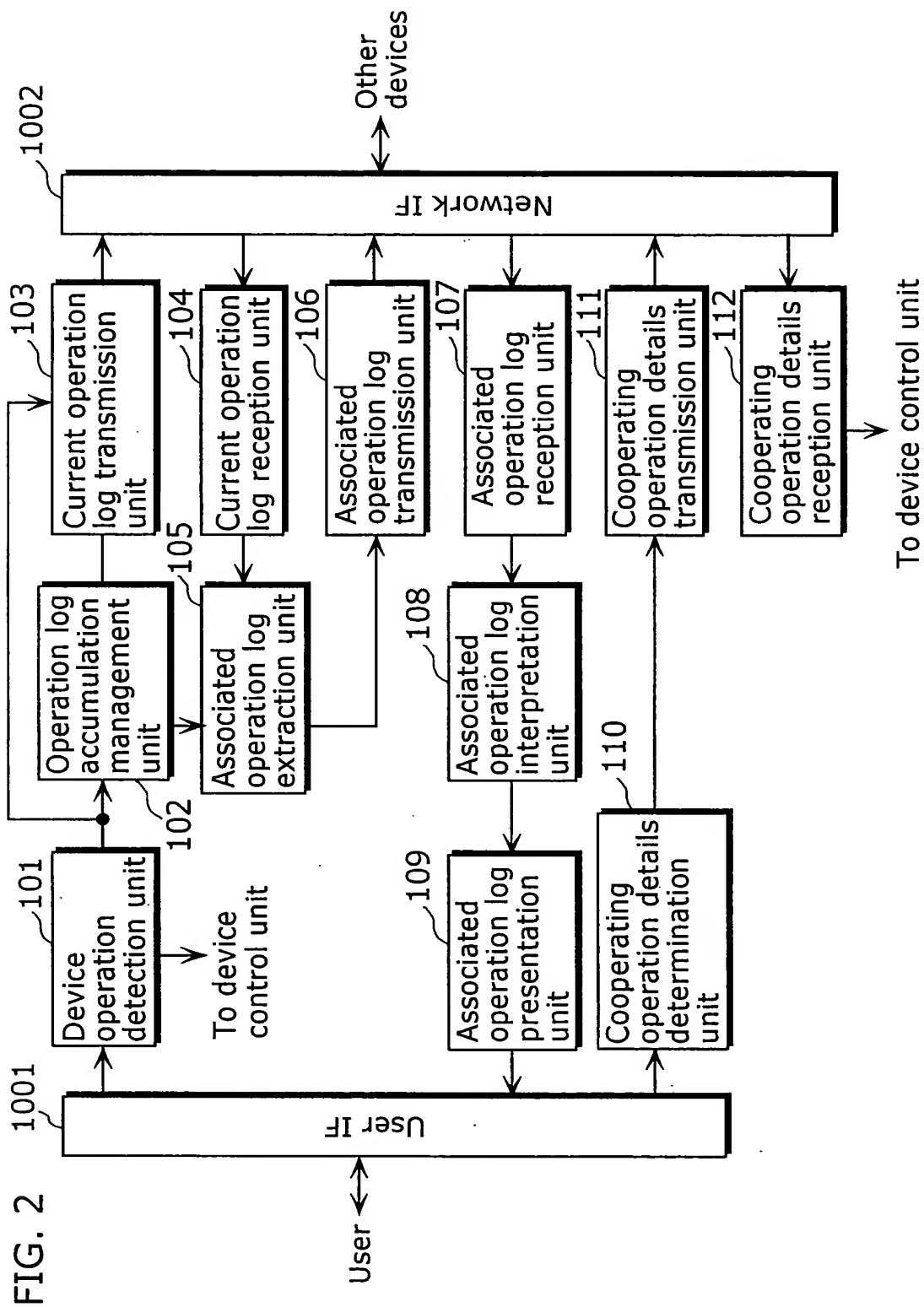


FIG. 3 MD compo

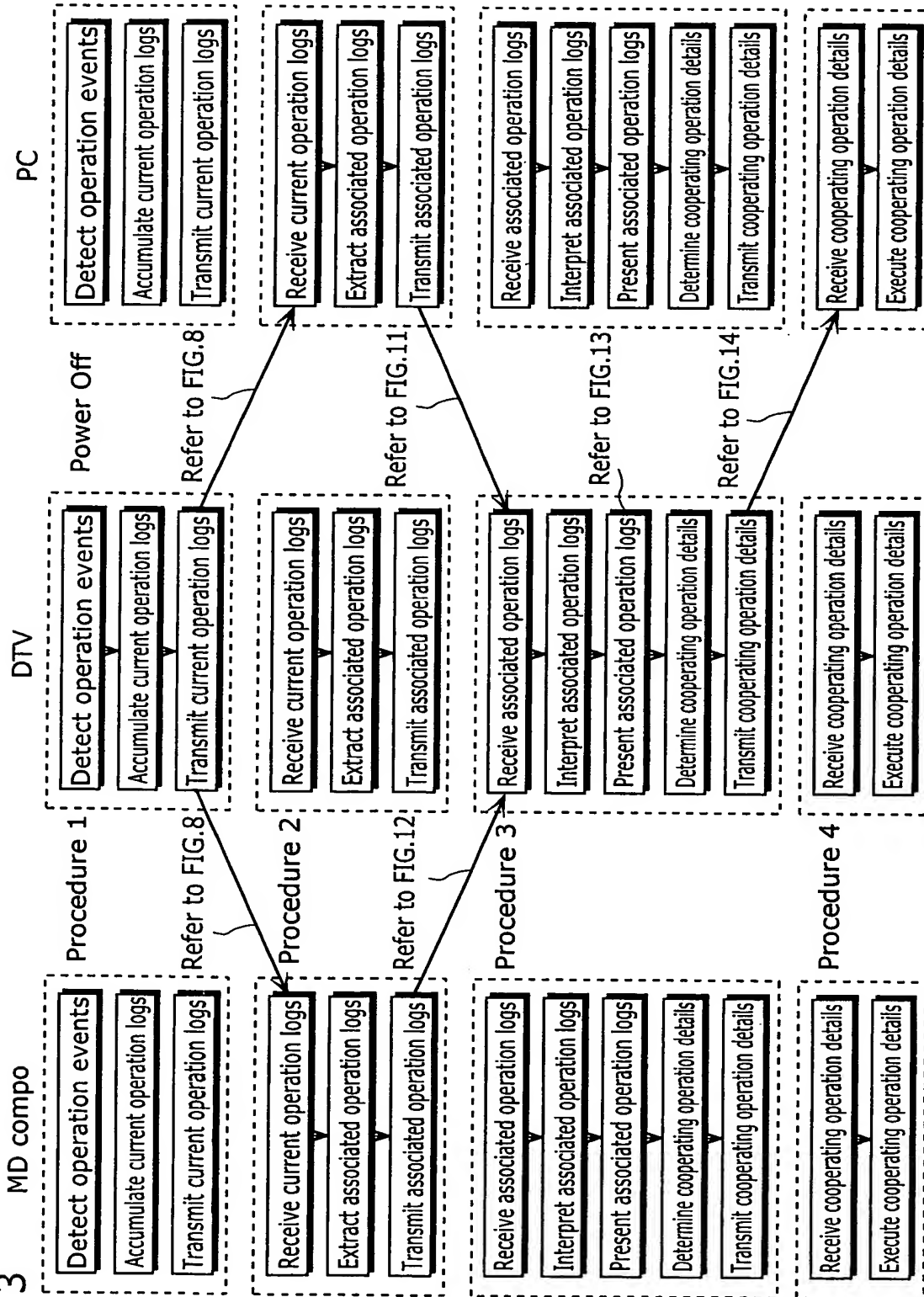


FIG. 4

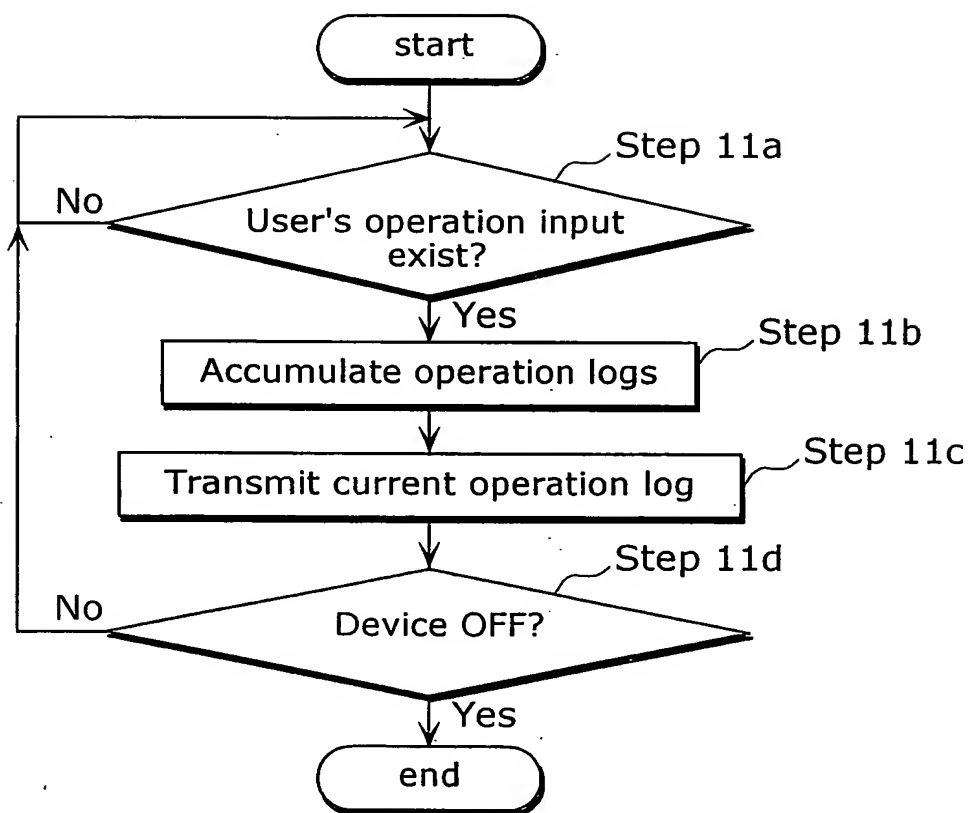


FIG. 5

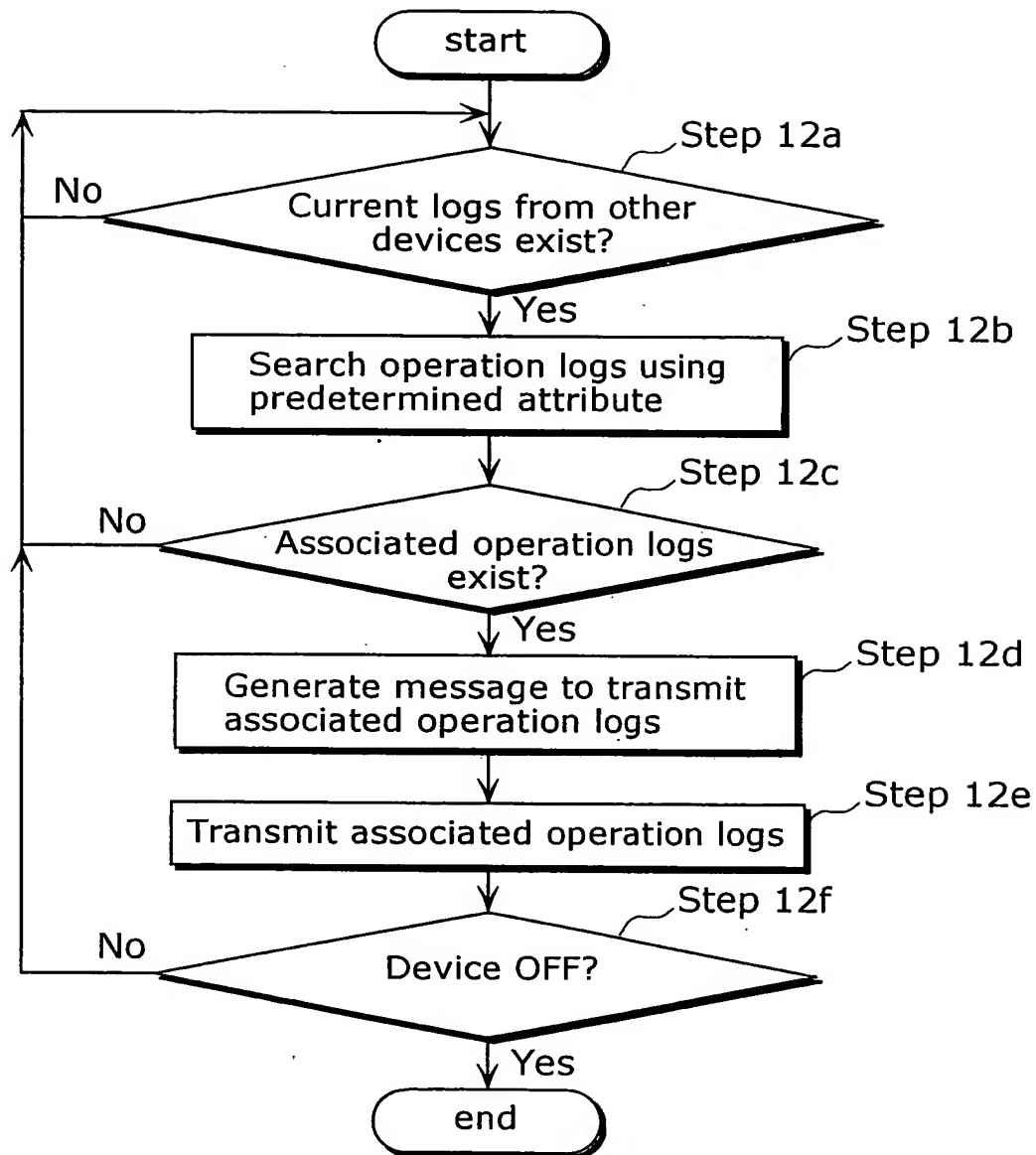


FIG. 6

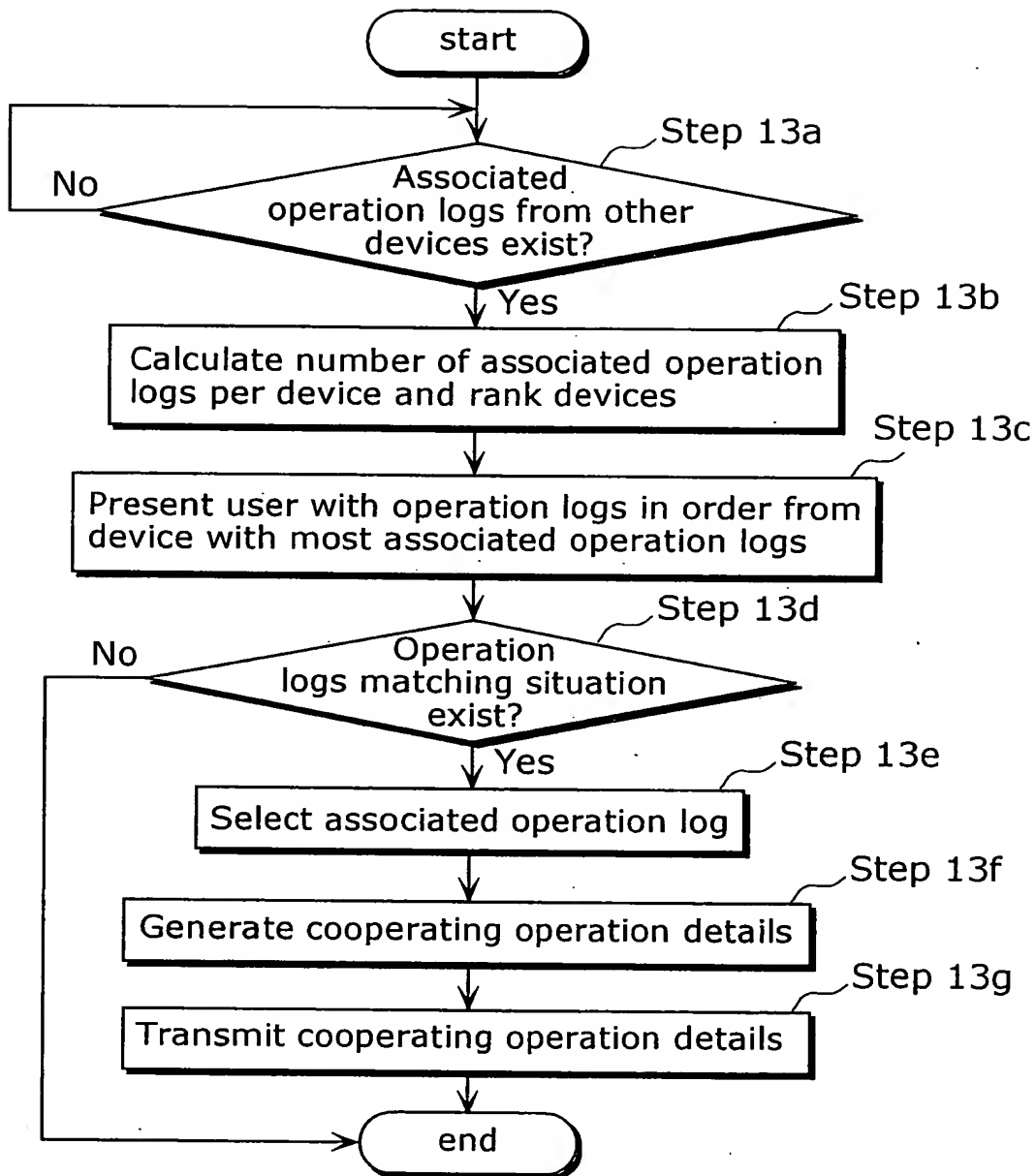


FIG. 7

- Date and time identifier<Time>
 yyyy/mm/dd/hh/mm/ss:Example) 2002/09/25, Wed, 21:00:00
- Operation identifier<Command>
 PowerOn, PowerOff, VolUp, VolDown
 Play, Record, Reserve, Send, Receive, Save, Delete, Update, Copy, Move, Boot, Activate
- User identifier<UserID>
 xxx@yyy. co. jp
- Device identifier<DeviceID>
- Device level identifier<DevicePerformanceLevel>
- Controller identifier<Controller ID>
- User cooperation identifier<PersonTo>, <PersonFrom>
- Device cooperation identifier<DeviceTo>, <DeviceFrom>
- Location identifier<Location>
- Cost identifier<Cost>
- Application identifier<ApplicationID>
- Media identifier<MediaID>
- Content identifier<ContentID>
- Service identifier<ServiceID>
- Object identifier<ObjectID>

FIG. 8

```
<OperationLog>
<DeviceID> Dtv. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L4 </DevicePerformanceLevel>
<Item>
<Time> 2002/09/25/Wed/20:57:00 </Time>
<Duration> 00:56:10 </Duration>
<Command> play </Command>
<ContentID> program://x-ch. osaka. tv/20020925210000-20020925215300 </ContentID>
</Item>
<Item>
<Time> 2002/09/25/Wed/21:53:10 </Time>
<Command> PowerOff </Command>
</Item>
</OperationLog>
```


FIG. 9

```

<OperationLog>
<DeviceID> PC. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L5 </DevicePerformanceLevel>

<Item>
<Time> 2002/09/18/Wed/21:54:13 </Time>
...

<Item>
<Time> 2002/09/19/Thu/21:53:12 </Time>
...

<Item>
<Time> 2002/09/24/Tue/21:53:04 </Time>
<Command> Boot </Command>
</Item>
<Item>
<Time> 2002/09/24/Tue/21:55:20 </Time>
<Command> Activate </Command>
<ApplicationID> Mailer-xxx </ApplicationID>
</Item>
<Item>
<Time> 2002/09/24/Tue/22:02:10 </Time>
<Command> Send </Command>
<PersonTo> xxx@yyy.co.jp </PersonTo>
</Item>

</OperationLog>

```

FIG. 10

```
<OperationLog>
<DeviceID> MD. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L2 </DevicePerformanceLevel>

<Item>
<Time> 2002/09/21/Sat/21:53:11 </Time>
...

<Item>
<Time> 2002/09/22/Sun/21:57:52 </Time>
<Command> PowerOn </Command>
</Item>
<Item>
<Time> 2002/09/22/Sun/21:57:55 </Time>
<Command> Tuner </Command>
<MediaID> FM </MediaID>
<ContentID> program://FM. osaka/20020925220000-20020925225700 </ContentID>
</Item>

</OperationLog>
```

FIG. 11

```
<RelatedLog>
<DeviceTo> DTV. xxx-net </DeviceTo>

<OperationLog>
<DeviceID> PC. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L5 </DevicePerformanceLevel>

<Item>
<Time> 2002/09/18/Wed/21:54:13 </Time>
...

<Item>
<Time> 2002/09/19/Thu/21:53:12 </Time>
...

<Item>
<Time> 2002/09/24/Tue/21:53:04 </Time>
<Command> Boot </Command>
</Item>
<Item>
<Time> 2002/09/24/Tue/21:55:20 </Time>
<Command> Activate </Command>
<ApplicationID> Mailer-xxx </ApplicationID>
</Item>
<Item>
<Time> 2002/09/24/Tue/22:02:10 </Time>
<Command> Send </Command>
<PersonTo> xxx@yyy. co. jp </PersonTo>
</Item>
</OperationLog>

</RelatedLog>
```

FIG. 12

```

<RelatedLog>
<DeviceTo> DTV. xxx-net </DeviceTo>

<OperationLog>
<DeviceID> MD. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L2 </DevicePerformanceLevel>

<Item>
<Time> 2002/09/21/Sat/21:53:11 </Time>
...

<Item>
<Time> 2002/09/22/Sun/21:57:52 </Time>
<Command> PowerOn </Command>
</Item>

<Item>
<Time> 2002/09/22/Sun/21:57:55 </Time>
<Command> Tuner </Command>
<MediaID> FM </MediaID>
<ContentID> program://FM. osaka/20020925220000-20020925225700 </ContentID>
</Item>
</OperationLog>

</RelatedLog>

```

FIG. 13

<DeviceID>	<Time>	<Command>	<ApplicationID>
PC. xxx-net	2002/09/24/ Tue/21:53:04	Boot	
PC. xxx-net	2002/09/24/ Tue/21:55:04	Activate	Mailer-xxx
PC. xxx-net	2002/09/23/ Mon/21:55:22	Boot	
PC. xxx-net	2002/09/23/ Mon/21:57:04	Activate	Mailer-xxx
PC. xxx-net	2002/09/20/ Fri/21:53:50	Boot	
PC. xxx-net	2002/09/20/ Fri/21:55:50	Activate	Mailer-xxx
PC. xxx-net	2002/09/19/ Thu/21:53:12	Boot	
PC. xxx-net	2002/09/19/ Thu/21:55:12	Activate	Mailer-xxx
PC. xxx-net	2002/09/18/ Wed/21:54:13	Boot	
PC. xxx-net	2002/09/18/ Wed/21:56:13	Activate	Mailer-xxx
<MediaID>			
MD. xxx-net	2002/09/22/ Sun/21:57:52	PowerOn	
MD. xxx-net	2002/09/22/ Sun/21:57:55	Tuner	FM, osaka/ 20020922220000-20020922225700
MD. xxx-net	2002/09/21/ Sat/21:53:11	PowerOn	
MD. xxx-net	2002/09/21/ Sat/21:53:15	Tuner	FM, osaka/ 20020921220000-20020921225700

<ContentID>

FIG. 14

<DeviceID>	<Time>	<Command>	<ApplicationID>
PC. xxx-net		Boot	
PC. xxx-net		Activate	Mailer-xxx



```
<CooperationRequest>
<DeviceID> PC. xxx-net </DeviceID>
<DevicePerformanceLevel> Device-L5 </DevicePerformanceLevel>
<Item>
<Time> Now </Time>
<Command> Boot </Command>
</Item>
<Item>
<Command> Activate </Command>
<ApplicationID> Mailer-xxx </ApplicationID>
</Item>
</CooperationRequest>
```

FIG. 15

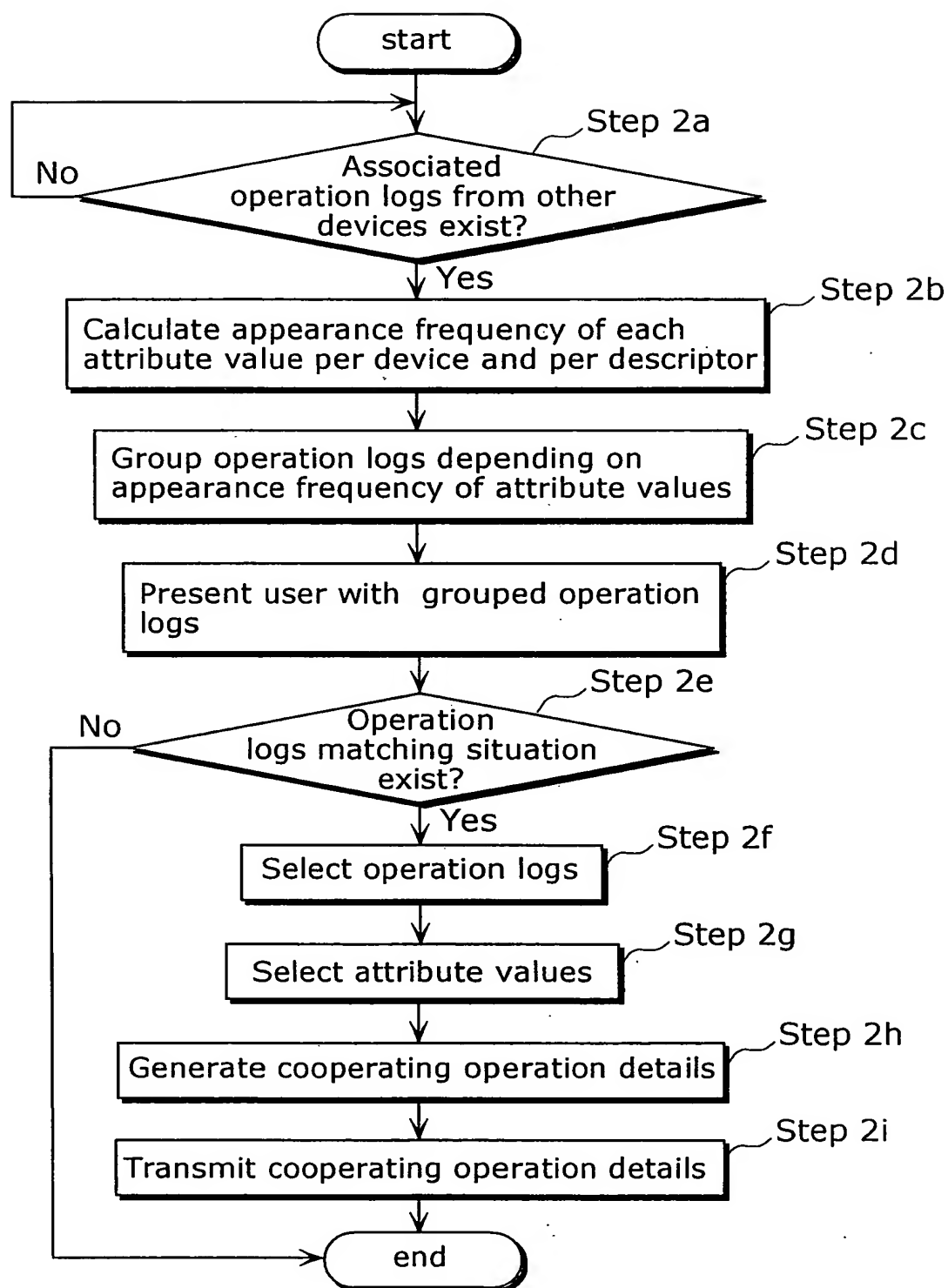


FIG. 16

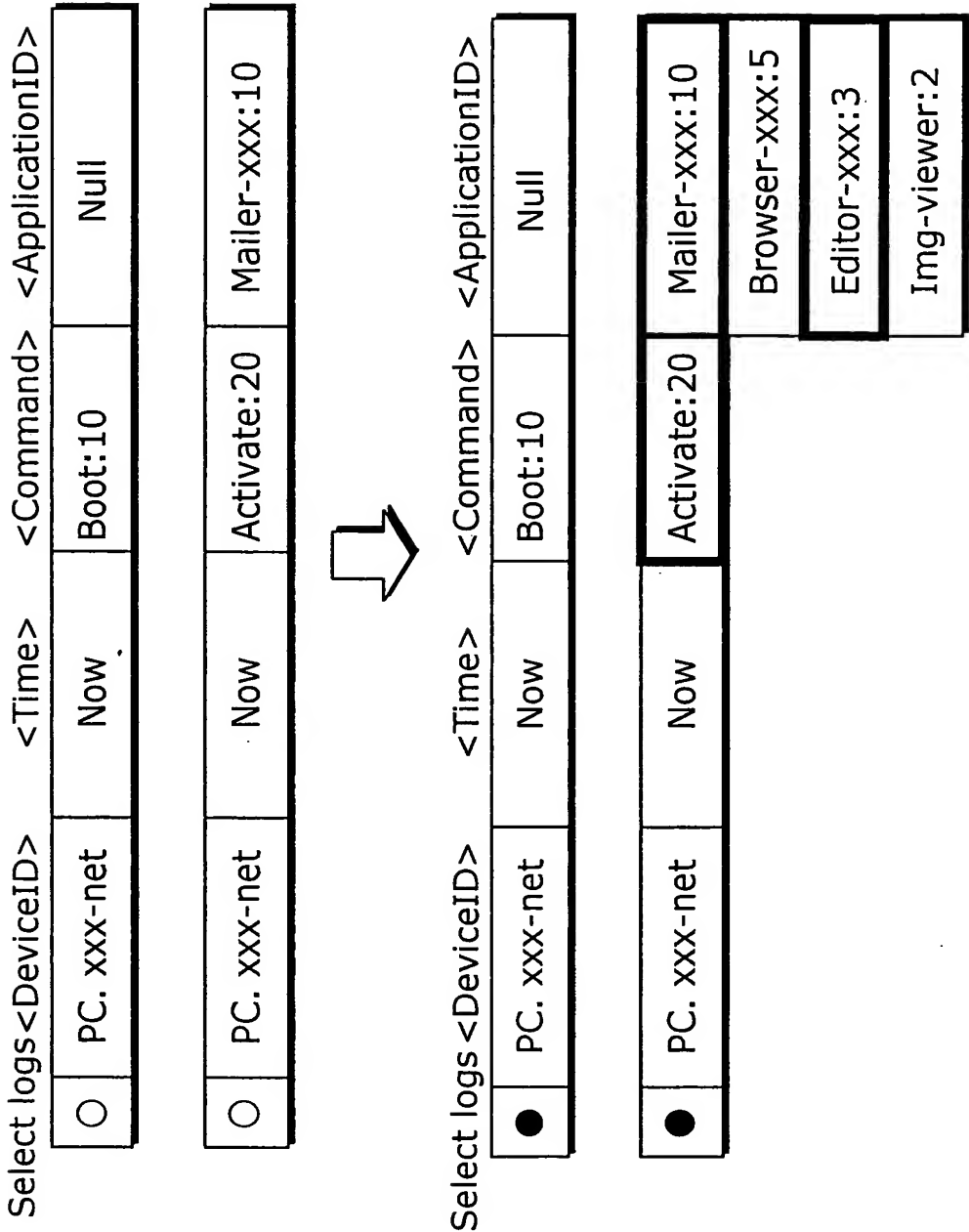


FIG. 17

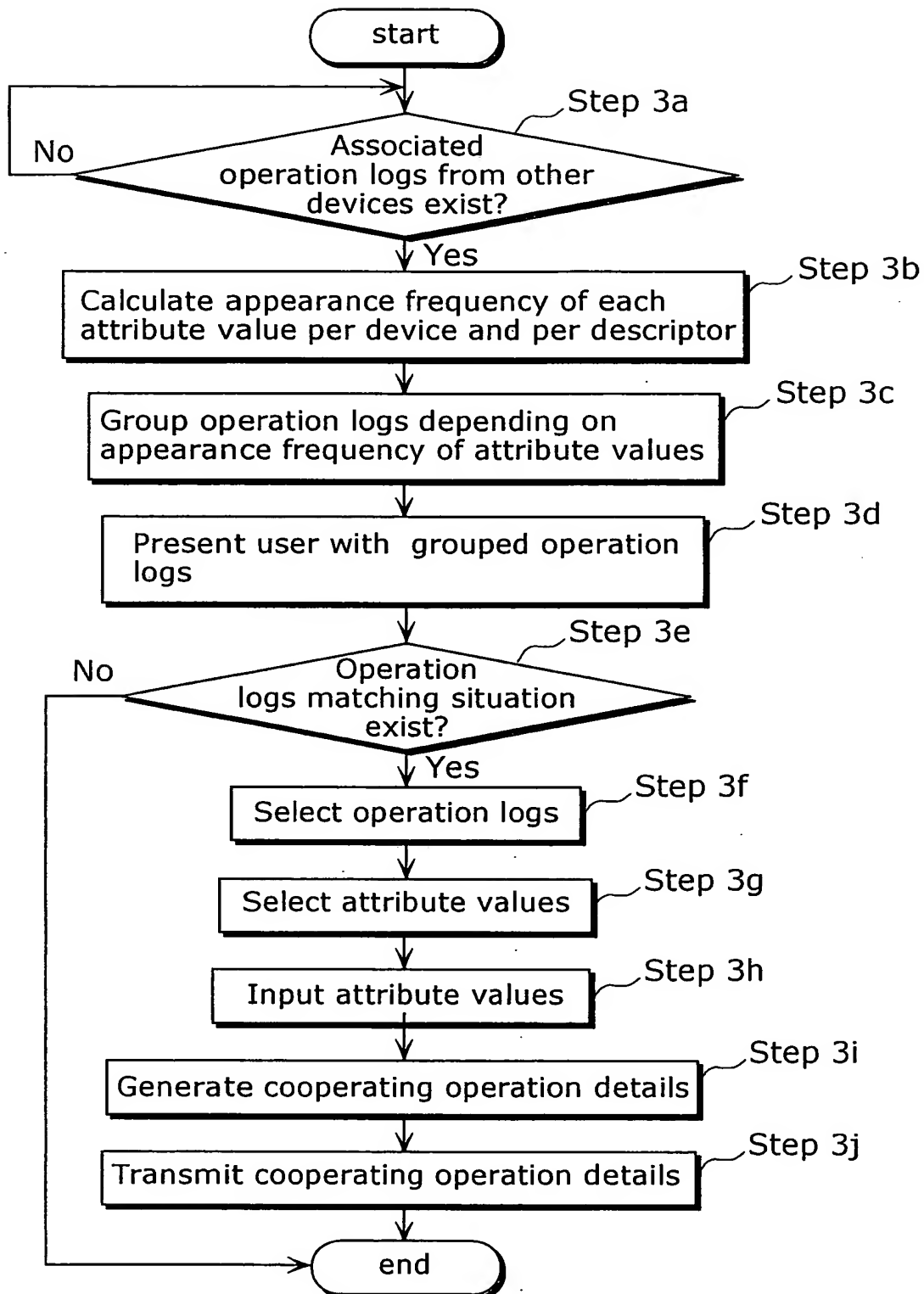


FIG. 18

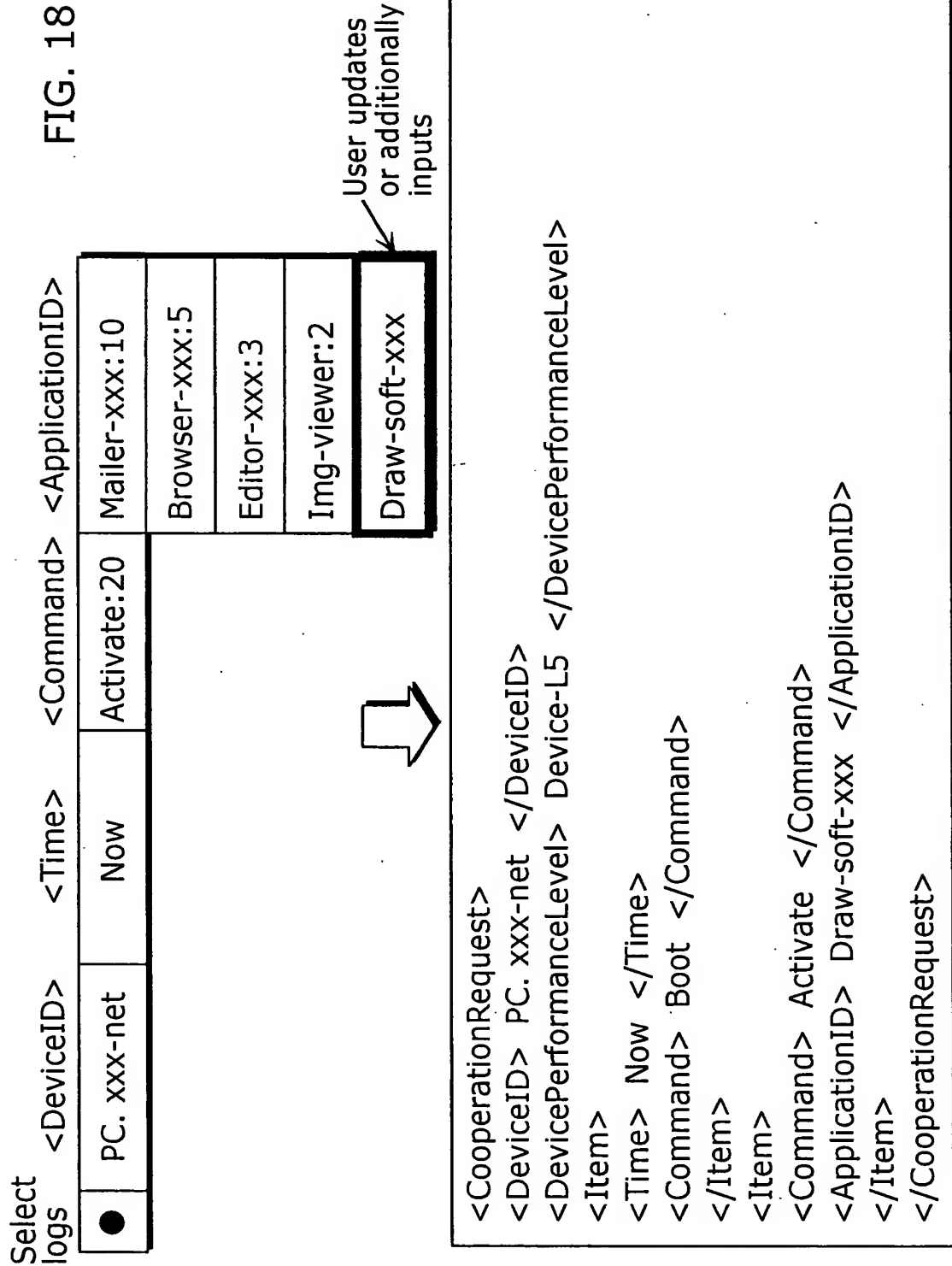


FIG. 19

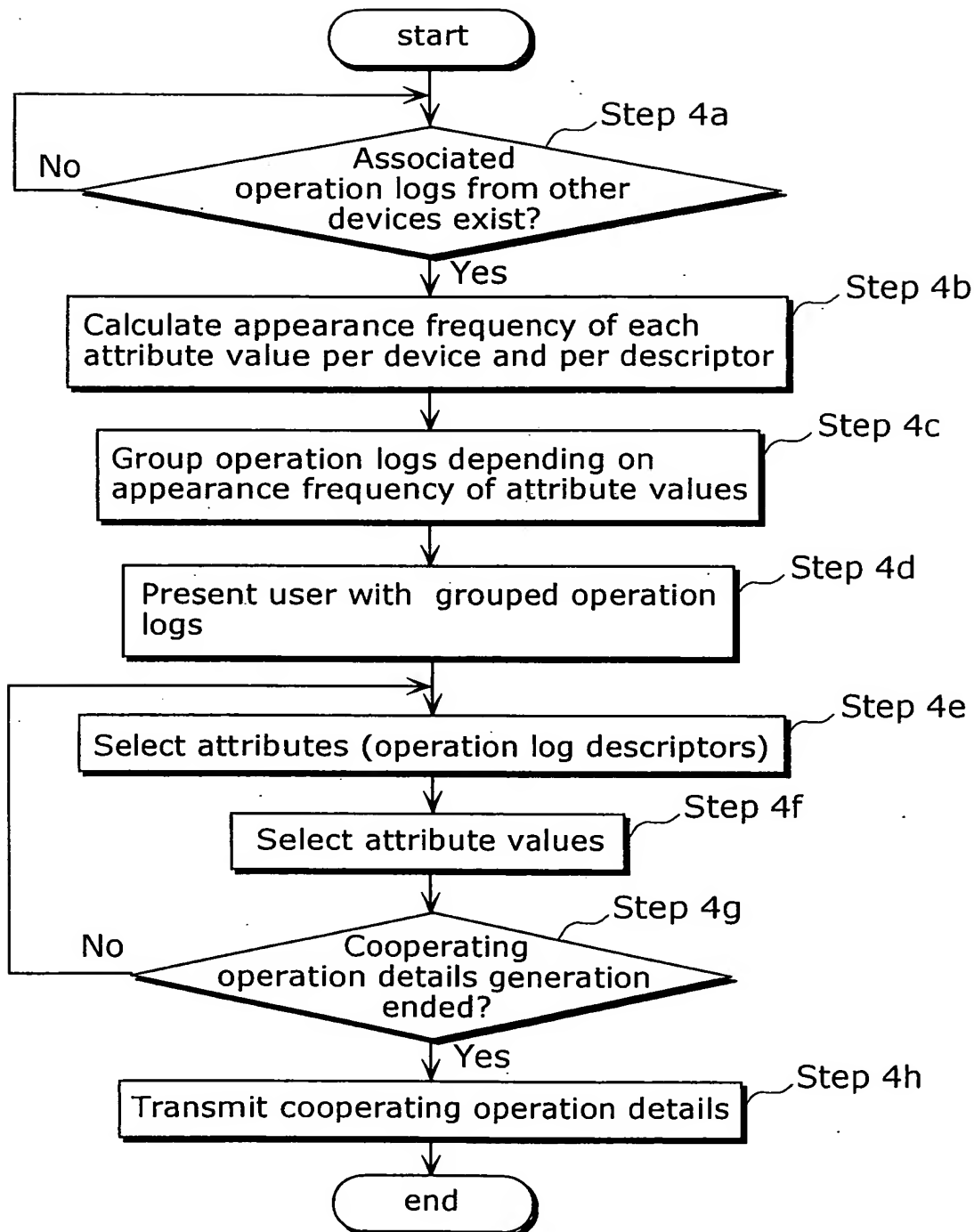


FIG. 20

<New cooperating operation details:initial state>

<DeviceID> <Command> <ApplicationID> <PersonTo> <ContentID> <DeviceFrom>

--	--	--	--	--	--



<Cooperating operation details:after selection using pull-down menu>

<DeviceID> <Command> <ApplicationID> <PersonTo> <ContentID> <DeviceFrom>

PC. xxx-net	Activate:20	Mailer-xxx:10	ppp. co. jp	B-xxx. mp2	HDD. xxx-net
PC. xxx-net	Activate:20	Mailer-xxx:10	ppp. co. jp	ttt. txt	
PC. xxx-net	Activate:20	MovieEditor:5		A-xxx. mp2	HDD. xxx-net
HDD. xxx-net	Rec			B-xxx. mp2	
MD. xxx-net	Rec			C-xxx. wav	PC. xxx-net

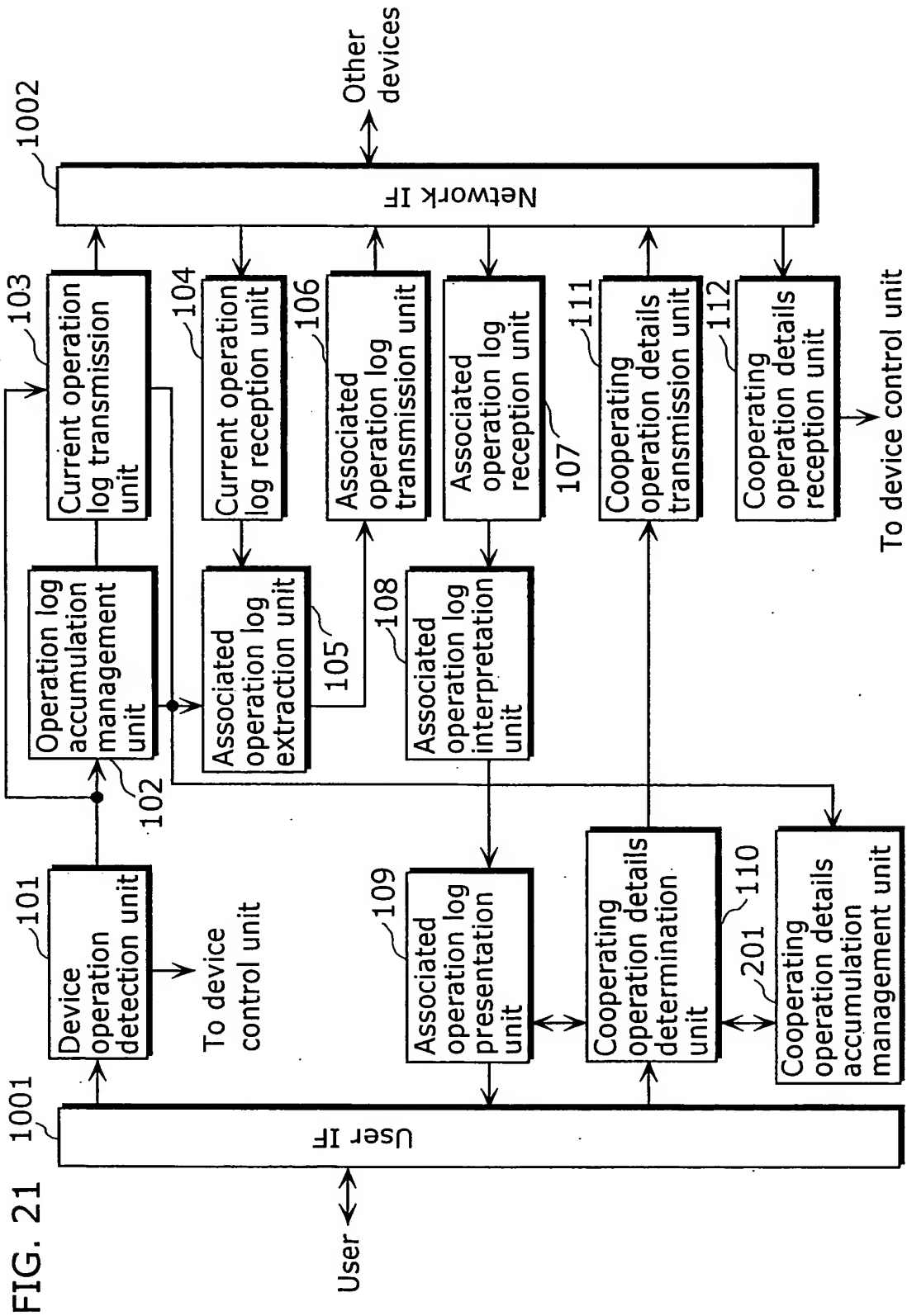


FIG. 22

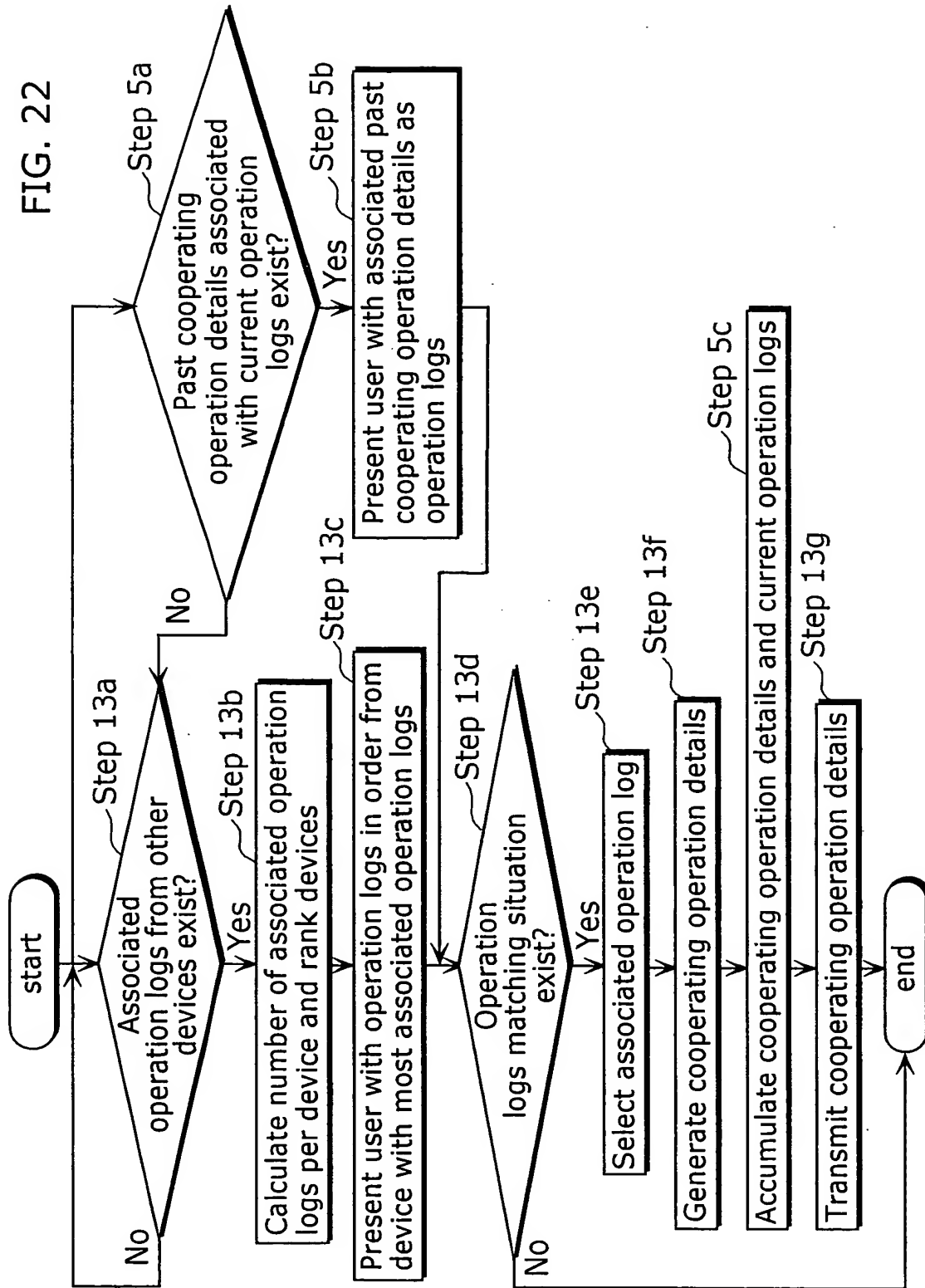




FIG. 24

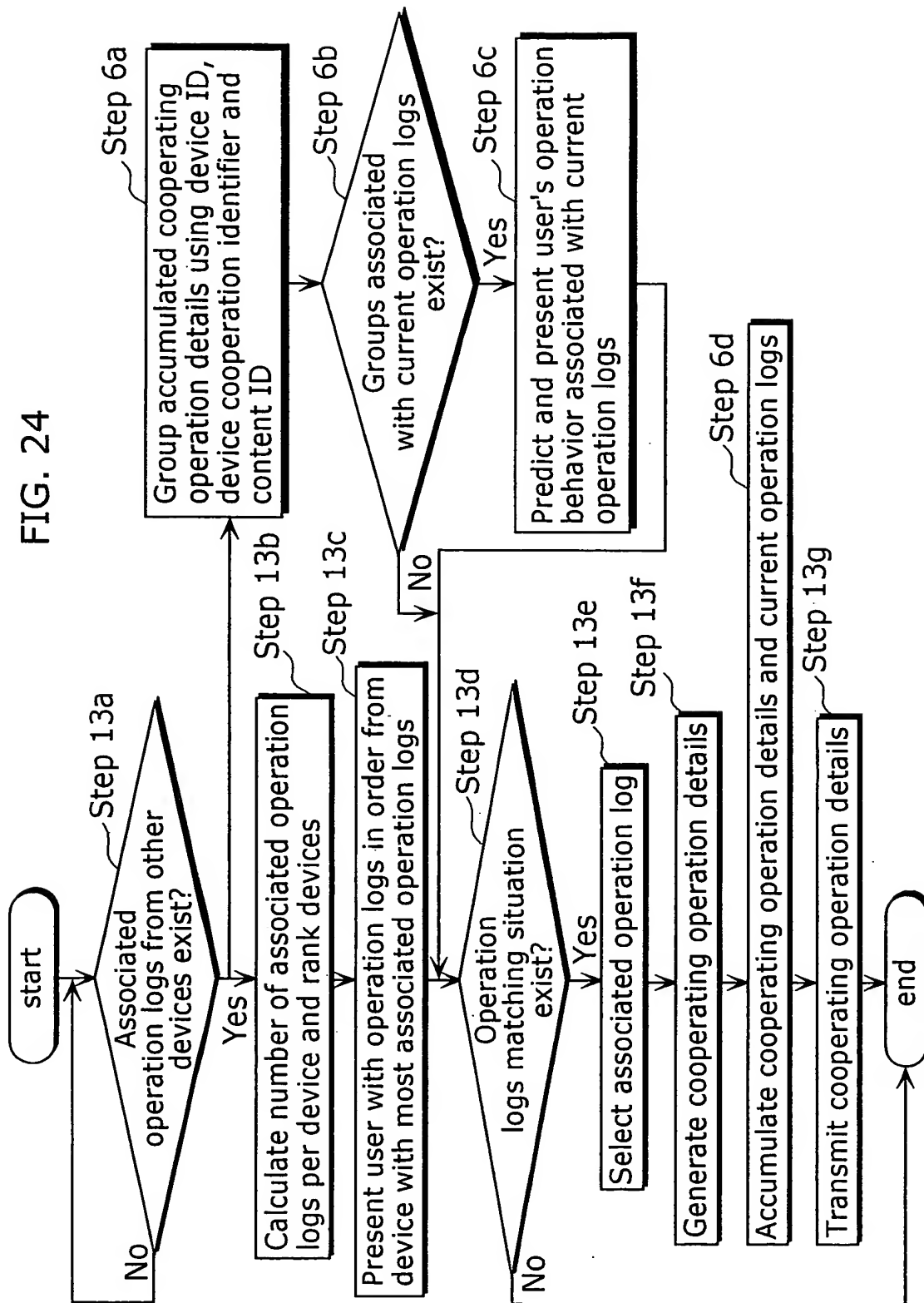


FIG. 25

(a) Grouped accumulated cooperating operation details

<DeviceID>	<Time>	<Command>	<ContentID>
HDD. xxx-net		Rec	A-xxxxxxx
PC. xxx-net		Copy	A-xxxxxxx
			HDD. xxx-net

Device cooperation identifier

(b) Current operation log

<DeviceID>	<Time>	<Command>	<ContentID>
HDD. xxx-net		Rec	B-xxxxxxx



Predicted cooperating operation details presented to user (replacement of content ID)

<DeviceID>	<Time>	<Command>	<ContentID>	<DeviceFrom>
PC. xxx-net		Copy	B-xxxxxxx	HDD. xxx-net

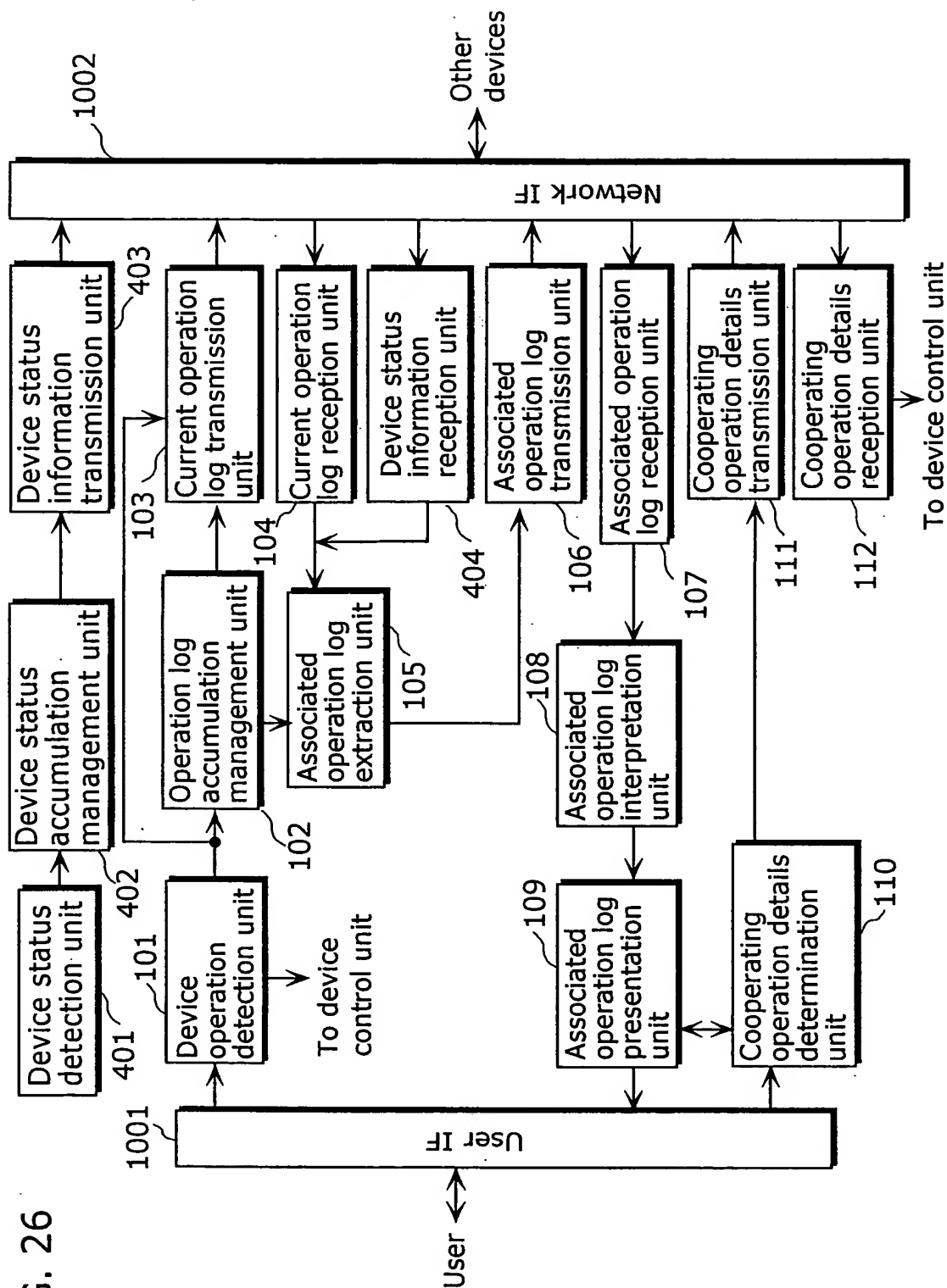


FIG. 26

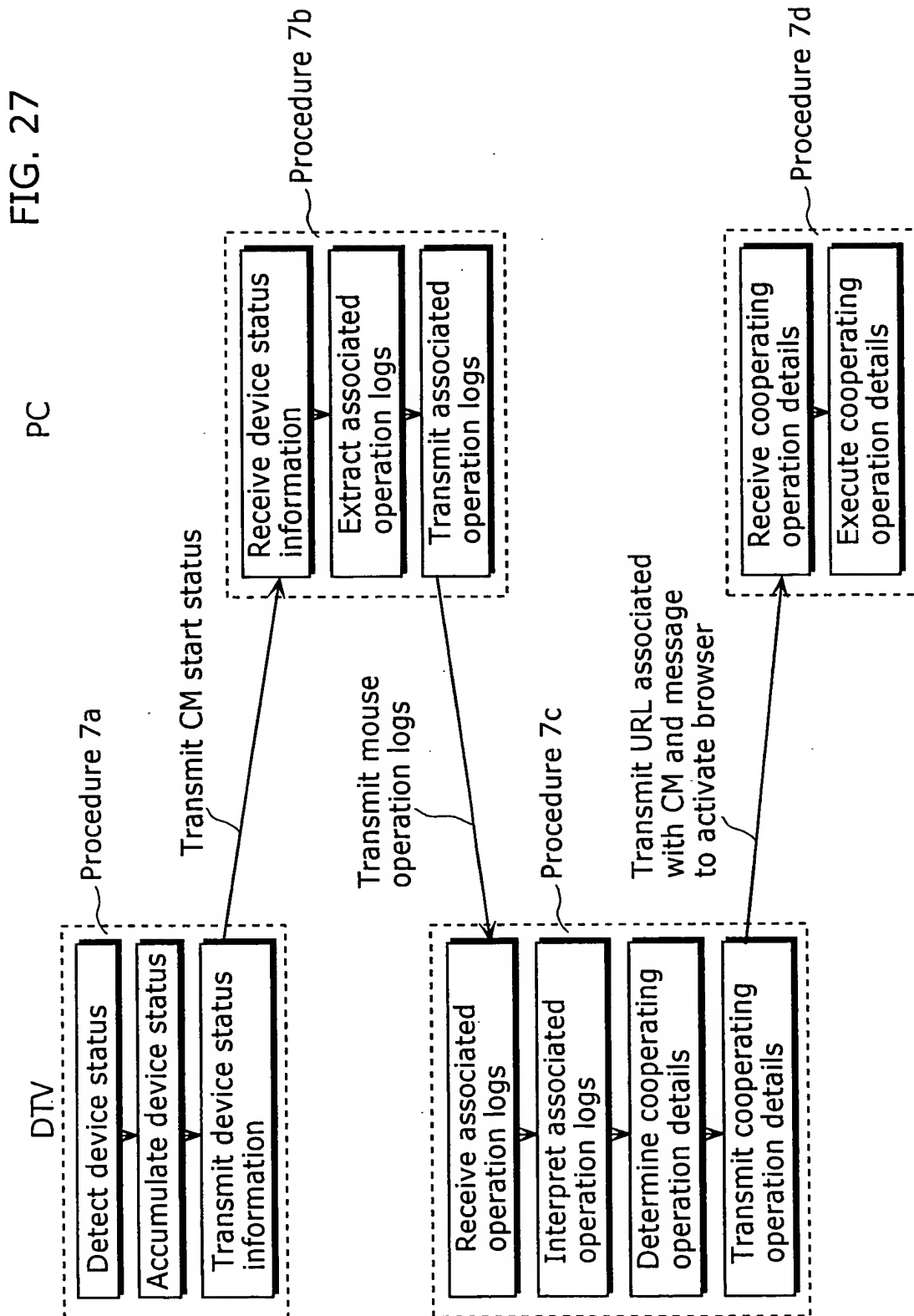


FIG. 28

